Alpine Lab, Aug. 29,1922.

Dear Munz.-

I have just been going over Clements, PLANT INDICATORS and particularly the part headed, Climax formations of Western North America (pages 105 to 236). Since I have been associated with this bunch here in the Ecological Section I have been having it repeatedly told me that the Life Zone concept was not only inadequate but was inexact and unscientific as well. All the time I replied that the zones I saw were as evident as the nose on a face, and that they were nothing to argue about. Lately the opposition has dinned it into me that it was not over the presence or existence of the so called life zones, that the fight was being waged but over their nature and cause. The presence of the zones are taken for granted but they are treated very differently by ecologists who scoff the temperature which Merriam stressed. Well since I have finally gotten this point of view I have become more approachable for the facts of the dynamic ecological explaination. These are set forth in the pages mentioned above and I wish that you would look them over.

I have had the inspiration of testing out the ecological system of plant formations in one of our paper on So Calif. groups and to see if it is actually better adapted to a precise and more natural discussion of distribution. Thinking it over it seems that it would be better than the old life zone concept. Of course we would be called upon to make more exact habital notes and have to pay more attention to the broader phases of the habitat, but I think this will do us some good. We would also be cutting new, or certainly little trodden ground, if we used ecological terms and concepts in stating our facts of distribution, and we might get some satisfaction from that fact. The life zone concept certainly does have short comings, as for example in the Upper Sonoran of SO Cal. where Clements climax breaks it up into what seem more usuable and natural lines. When you stop to think of it Climax types of vegetation ought to be a darn good index of the environment, and when one says that Pentstemon spectabilis occurs in disturbed gravelly places where it forms an early stage in the Coastal Sagebrush, it is more exact than saying it occurs in the Upper Sonoran Zone in gravelly soil on the coastal slopes. The whole point is that the ecological system allows one to give the plants position in the environment more exactly, and more scientifically, and the same also seems to be true of the position geographically speaking.

In order to do this work we would have to consider, and study ecology continuously, but this I take it you would have no objections to, and as far as I am concerned I am willing to try out this line of thinking which I have heard so much in praise. We would have to get the habit of trying to analyze plant groupings and to of studing or noticing the varying relations which the various species have to their associations. In other words we would have to turn ecologists. I have been repeatedly told that the ecological attitude results in an entirely new appreciation of plants, so I am game to try out the system if you are. At any rate you who are in the middle of the field ought to consider the idea and to test it out in a generally way. Certainly we dont want to stick to the life zone concept if the ecological approach is better. The Merriam system is of course easy to apply because it has been accepted so long and so much done on it, and on the contrary the ecological method is hard to apply, as only the more general phases have been worked out. Personally I think we ought to compare the two systems rather carefully and if we find the newer one better for our wants to accept it and try to develop it as far as So Calif. is concerned.

Acc. to Clements (OP.CIT) we are supposed to have in SO Calif. the following associations. Bunch Grass Prairie (pg. 149), Coastal Sage Brush (p. 160), Western Desert Scrub (p.170), Coastal Chaparral (p.190), Pine-Oak Woodland (p. 202), ~~Sierran~~

Sierran Montane Forest (p. 211), and Sierran Subalpine Forest (p. 226). The Desert Scrub is our present L. Son. Zone; the Montane is our Trans. Zone; the Subalpine in the Canad. and Huds. (which by the way ught to be thrown together anyway); while all the four remaining all fall in the Upp. Son. All looks pretty good to me except his defination of the Pine -Oak Woodland (pp.202 to205) I can't stand to see our desert Juniper -pinon belt throw in with the Digger Pine-Oak formation of the Sierran Foothills. His evidence for doing so look fishy to me. I have been talking over the formations with Clements and among other thing he says that he thinks our oak groves are savannah types, or a subclimax mingling of the arborescent with the grassland or coastal sage. It seems to me we ought to look over our vegetation with a critical eye and see if we come to the same conclusions as Clements has. If the whole approach looks good, we could plan to give it a rather detailed statement for our area. Well think the whole thing over and let me know what you think of it. PLANT INDICATORS seems to be a much more readable book than PLANT SUCCESSION and if you have not studied it over you should do so. It is Carneg. Publ. # 290 and came out in 1920.

V. J.

I have made Clements all but swear that he would look you up when he was in So Calif. next spring. If he suggests taking you out on a trip with him do so for you certainly will get a better idea of his grasp on ecology if you do so. He has a lot of phony ideas but let him spout them and keep your own.